



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6

SVOC DATA PACKAGE

Client Project Information

Project ID: 60566335
Project Description: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Contact: Amy Dahl

ALSE Project Information

Project ID: AECOM100

Contact: Claire Kocharakkal
Submission ID(s): L2161800

Final Package Review by:

A handwritten signature in black ink, appearing to read 'S. Dahl', is written over a horizontal line.

Date Reviewed:

2-Oct-18

SVOC DATA PACKAGE

SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: AECOM100
Contact: Claire Kocharakkal
Submission ID(s): L2161800

Client Project Information

Project ID: 60566335
Project Description: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Contact: Amy Dahl

Analytical Method: 2,4'- and 4,4'- DDD, DDE and DDT by EPA 1699 (modified)

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed
L2161800-1	PDI-SC-S113C-0TO1.1	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	28-Sep-18
WG2879551-4	Duplicate	QC	n/a	n/a	20-Sep-18	28-Sep-18
L2161800-2	PDI-SC-S113C-1.1TO3.1	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	28-Sep-18
L2161800-3	PDI-SC-S113C-3.1TO5.6	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	28-Sep-18
L2161800-4	PDI-SC-S113C-5.6TO6.6	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	28-Sep-18
L2161800-5	PDI-SC-S260-0TO1.3	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	28-Sep-18
L2161800-6	PDI-SC-S260-1.3TO2.6	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	28-Sep-18
L2161800-7	PDI-SC-S260-2.6TO4.2	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	28-Sep-18
L2161800-8	PDI-SC-S260-4.2TO6	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	29-Sep-18
L2161800-9	PDI-SC-S260-6TO7	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	29-Sep-18
L2161800-10	PDI-SC-S019-0TO2	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	29-Sep-18
L2161800-11	PDI-SC-S019-2TO4	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	29-Sep-18
L2161800-12	PDI-SC-S019-4TO6	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	29-Sep-18
L2161800-13	PDI-SC-S019-6TO8	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	29-Sep-18
L2161800-14	PDI-SC-S019-8TO10	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	29-Sep-18
L2161800-15	PDI-SC-S019-10TO12	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	29-Sep-18
L2161800-16	PDI-SC-S019-12TO13.7	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	29-Sep-18
L2161800-17	PDI-SC-S019-13.7TO14.7	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	29-Sep-18
L2161800-18	PDI-SC-S019-10TO12D	Sediment	06-Sep-18	11-Sep-18	20-Sep-18	29-Sep-18
WG2879551-1	Method Blank	QC	n/a	n/a	20-Sep-18	28-Sep-18
WG2879551-2	Laboratory Control Sample	QC	n/a	n/a	20-Sep-18	28-Sep-18

Comments and Notes:

a) Sample Integrity:

The samples were received in good condition at 6.4 degrees C.

b) Instrumental Analysis:

The samples have been analyzed with an instrument method where conditions are optimized for acquisition of the selected targets only.

The highest available calibration level has not been analyzed as it was expected to saturate the instrument detector.

Six calibration levels have been included.

All results have been reported on a dry weight basis

The sample PDI-SC-S113C-0TO1.1 and the laboratory duplicate have been reported from the analysis of diluted extracts due to interferences causing localized regions of suppression

The sample PDI-SC-S260-1.3TO2.6 has been reported from the analysis of a diluted extract due to high target levels.

The samples PDI-SC-S260-2.6TO4.2 and PDI-SC-S260-4.2TO6 have been reported from reanalyses of the extracts in order to preclude carryover from the prior higher level extract.

No criteria failures or exceedences.

I certify that this data package is in compliance with the terms and condition of the contract , both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or his designee, as verified by the following signature.


Steve Kennedy, Technical Supervisor

2-Oct-18
Date



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6

SVOC DATA PACKAGE

SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: AECOM100

Contact: Claire Kocharakkal

Submission ID(s): L2161800

Client Project Information

Project ID: 60566335

Project Description: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling

Contact: Amy Dahl

Analytical Method: 2,4'- and 4,4'- DDD, DDE and DDT by EPA 1699 (modified)

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed
L2161800-19	PDI-RB-SS-180906	Water	06-Sep-18	11-Sep-18	12-Sep-18	27-Sep-18
L2161800-20	PDI-RB-LL-180907	Water	07-Sep-18	11-Sep-18	12-Sep-18	27-Sep-18
L2161800-21	PDI-RB-AL-180907	Water	07-Sep-18	11-Sep-18	12-Sep-18	27-Sep-18
WG2874099-1	Method Blank	QC	n/a	n/a	12-Sep-18	27-Sep-18
WG2874099-2	Laboratory Control Sample	QC	n/a	n/a	12-Sep-18	27-Sep-18

Comments and Notes:

a) Sample Integrity:

The samples were received in good condition at 6.4 degrees C.

b) Instrumental Analysis:

The samples have been analyzed with an instrument method where conditions are optimized for acquisition of the selected targets only.

The highest available calibration level has not been analyzed as it was expected to saturate the instrument detector.

Six calibration levels have been included.

For the laboratory control sample (LCS), the recovery of the labelled standard 13C12-4,4'-DDE is below the method control limit. As a result, the recovery of the native target 2,4'-DDE, which calculates against it, is elevated. This target has not been detected in the samples.

I certify that this data package is in compliance with the terms and condition of the contract , both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Steve Kennedy, Technical Supervisor

1-Oct-18

Date

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SECTION 2: DATA SUMMARY REPORT



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact: Claire Kocharakkal
ALS Project ID: AECOM100
ALS WO#: L2161800
Date of Report: 1-Oct-18
Date of Sample Receipt: 11-Sep-18

Client Name: AECOM United States
Client Address: 1111 Third Avenue
Suite 1600
Seattle, WA 98101, USA
Client Contact: Amy Dahl
Client Project ID: 60566335

COMMENTS: 2,4'- and 4,4'- DDD, DDE and DDT by EPA 1699 (modified)

Certified by:

A handwritten signature in black ink, appearing to read 'Steve Kennedy', is written over a horizontal line.

Steve Kennedy
Technical Supervisor

Results in this certificate relate only to the samples as submitted to the laboratory.

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Sample Analysis summary Report

Sample Name	PDI-SC-S113C-0TO1.1	Duplicate of PDI-SC-S113C-0TO1.1	PDI-SC-S113C-1.1TO3.1	PDI-SC-S113C-3.1TO5.6	PDI-SC-S113C-5.6TO6.6	PDI-SC-S260-0TO1.3
ALS Sample ID	L2161800-1	WG2879551-4	L2161800-2	L2161800-3	L2161800-4	L2161800-5
Sample Size	5.18	5.26	8.32	8.33	8.04	4.74
Sample size units	g	g	g	g	g	g
Percent Solid	50.2%	51.3%	79.8%	80.0%	79.6%	45.5%
Sample Matrix	Sediment	QC	Sediment	Sediment	Sediment	Sediment
Sampling Date	6-Sep-18	n/a	6-Sep-18	6-Sep-18	6-Sep-18	6-Sep-18
Extraction Date	20-Sep-18	20-Sep-18	20-Sep-18	20-Sep-18	20-Sep-18	20-Sep-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	2.02	2.97	0.0740	<0.0088	<0.012	3.73
4,4'-DDE	12.7	13.2	0.424	0.0436	<0.014	25.7
2,4'-DDD	32.7	28.8	2.20	0.245	<0.057	112
4,4'-DDD	60.5	56.9	5.22	0.618	0.122	292
2,4'-DDT	<0.76	<0.60	<0.025	<0.024	<0.031	24.6
4,4'-DDT	<1.1	<0.90	0.189	<0.035	<0.043	356
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	97	99	105	104	97	109
4,4'-DDD, 13C12-	89	81	83	80	75	93
4,4'-DDT, 13C12-	65	63	73	69	64	77

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Sample Analysis summary Report

Sample Name	PDI-SC-S260- 1.3TO2.6	PDI-SC-S260- 2.6TO4.2	PDI-SC-S260- 4.2TO6	PDI-SC-S260-6TO7	PDI-SC-S019-0TO2	PDI-SC-S019-2TO4
ALS Sample ID	L2161800-6	L2161800-7	L2161800-8	L2161800-9	L2161800-10	L2161800-11
Sample Size	5.81	7.41	8.24	7.76	5.77	5.59
Sample size units	g	g	g	g	g	g
Percent Solid	56.4%	71.8%	80.6%	77.4%	56.3%	54.8%
Sample Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sampling Date	6-Sep-18	6-Sep-18	6-Sep-18	6-Sep-18	6-Sep-18	6-Sep-18
Extraction Date	20-Sep-18	20-Sep-18	20-Sep-18	20-Sep-18	20-Sep-18	20-Sep-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	12.8	0.205	<0.014	<0.0085	0.623	1.07
4,4'-DDE	58.1	0.942	<0.023	0.0286	11.8	13.8
2,4'-DDD	567	8.90	<0.025	0.0489	2.15	3.58
4,4'-DDD	1070	16.7	<0.037	0.0787	7.15	10.0
2,4'-DDT	91.9	1.53	<0.041	<0.020	0.169	0.190
4,4'-DDT	1340	15.0	<0.075	0.0982	0.386	0.325
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	97	91	80	100	80	105
4,4'-DDD, 13C12-	80	65	49	70	69	77
4,4'-DDT, 13C12-	56	44	35	53	54	57

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Sample Analysis summary Report

Sample Name	PDI-SC-S019-4TO6	PDI-SC-S019-6TO8	PDI-SC-S019-8TO10	PDI-SC-S019-10TO12	PDI-SC-S019-12TO13.7	PDI-SC-S019-13.7TO14.7
ALS Sample ID	L2161800-12	L2161800-13	L2161800-14	L2161800-15	L2161800-16	L2161800-17
Sample Size	5.66	5.83	5.91	5.85	6.07	6.38
Sample size units	g	g	g	g	g	g
Percent Solid	56.1%	57.6%	58.8%	58.3%	58.8%	61.7%
Sample Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sampling Date	6-Sep-18	6-Sep-18	6-Sep-18	6-Sep-18	6-Sep-18	6-Sep-18
Extraction Date	20-Sep-18	20-Sep-18	20-Sep-18	20-Sep-18	20-Sep-18	20-Sep-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	0.938	1.17	2.22	1.38	2.26	0.772
4,4'-DDE	12.7	14.2	16.8	8.37	11.9	5.56
2,4'-DDD	2.95	4.05	15.1	8.42	54.5	7.21
4,4'-DDD	9.44	14.0	35.8	16.9	115	13.7
2,4'-DDT	<0.11	0.230	<0.26	<0.23	6.55	0.277
4,4'-DDT	0.240	14.7	1.36	0.652	34.7	0.346
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	109	78	109	110	113	114
4,4'-DDD, 13C12-	74	54	79	80	88	77
4,4'-DDT, 13C12-	54	40	55	58	60	55

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Sample Analysis summary Report

Sample Name PDI-SC-S019-10TO12D

ALS Sample ID L2161800-18

Sample Size 5.90

Sample size units g

Percent Solid 58.5%

Sample Matrix Sediment

Sampling Date 6-Sep-18

Extraction Date 20-Sep-18

Target Analytes ng / g

2,4'-DDE 2.32

4,4'-DDE 13.2

2,4'-DDD 14.6

4,4'-DDD 28.1

2,4'-DDT 0.439

4,4'-DDT 0.707

Extraction Standards % Rec

4,4'-DDE, 13C12- 110

4,4'-DDD, 13C12- 77

4,4'-DDT, 13C12- 54

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Quality Control Summary Report		
Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2879551-1	WG2879551-2
Sample Size	5.00	5.00
Sample size units	g	g
Percent Solid	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	20-Sep-18	20-Sep-18
Target Analytes	ng / g	% Rec
2,4'-DDE	<0.012	101
4,4'-DDE	<0.014	92
2,4'-DDD	<0.018	111
4,4'-DDD	<0.021	93
2,4'-DDT	<0.023	106
4,4'-DDT	<0.037	93
Extraction Standards	% Rec	% Rec
4,4'-DDE, 13C12-	88	81
4,4'-DDD, 13C12-	71	64
4,4'-DDT, 13C12-	56	55

ALS Life sciences					
Continuing Calibration Summary Report					
Sample Name	CVS	CCV	CCV	CCV	CCV
ALS Sample ID	H6-18-RS1-089	H6-18-CCV-1068	H6-18-CCV-1070	H6-18-CCV-1086	H6-18-CCV-1088
Sample Size	1	1	1	1	1
Sample size units	n/a	n/a	n/a	n/a	n/a
Percent Solid	n/a	n/a	n/a	n/a	n/a
Sample Matrix	QC	QC	QC	QC	QC
Sampling Date	n/a	n/a	n/a	n/a	n/a
Extraction Date	n/a	n/a	n/a	n/a	n/a
Target Analytes	% Rec	% Rec	% Rec	% Rec	% Rec
2,4'-DDE		98	101	117	115
4,4'-DDE	95	99	103	107	105
2,4'-DDD		100	101	114	116
4,4'-DDD	99	101	102	103	99
2,4'-DDT		98	115	118	125
4,4'-DDT	97	100	104	106	104
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	104	101	120	95	99
4,4'-DDD, 13C12-	104	99	104	90	90
4,4'-DDT, 13C12-	107	102	82	77	72

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Sample Analysis summary Report

Sample Name PDI-RB-SS-180906 PDI-RB-LL-180907 PDI-RB-AL-180907

ALS Sample ID L2161800-19 L2161800-20 L2161800-21

Sample Size	1.05	0.95	1.06
Sample size units	L	L	L
Percent Solid	n/a	n/a	n/a
Sample Matrix	Water	Water	Water
Sampling Date	6-Sep-18	7-Sep-18	7-Sep-18
Extraction Date	12-Sep-18	12-Sep-18	12-Sep-18

Target Analytes	ng / L	ng / g	ng / g
2,4'-DDE	<0.15	<0.24	<0.13
4,4'-DDE	<0.19	<0.31	<0.17
2,4'-DDD	<0.34	<0.51	<0.25
4,4'-DDD	<0.18	<0.18	<0.15
2,4'-DDT	<0.21	<0.21	<0.18
4,4'-DDT	<0.39	<0.42	<0.30
Extraction Standards	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	45	26	47
4,4'-DDD, 13C12-	68	63	64
4,4'-DDT, 13C12-	40	31	39

ALS Life sciences		
Quality Control Summary Report		
Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2874099-1	WG2874099-2
Sample Size	1.00	1.00
Sample size units	L	n/a
Percent Solid	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	12-Sep-18	12-Sep-18
Target Analytes	ng / L	% Rec
2,4'-DDE	<0.083	152
4,4'-DDE	<0.11	95
2,4'-DDD	<0.18	103
4,4'-DDD	<0.17	93
2,4'-DDT	<0.19	90
4,4'-DDT	<0.27	94
Extraction Standards	% Rec	% Rec
4,4'-DDE, 13C12-	75	15
4,4'-DDD, 13C12-	67	58
4,4'-DDT, 13C12-	49	22

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Continuing Calibration Summary Report			
Sample Name	CCV	CCV	CCV
ALS Sample ID	H6-18-RS1-087	H6-18-CCV-1050	H6-18-CCV-1052
Sample Size	1	1	1
Sample size units	n/a	n/a	n/a
Percent Solid	n/a	n/a	n/a
Sample Matrix	QC	QC	QC
Sampling Date	n/a	n/a	n/a
Extraction Date	n/a	n/a	n/a
Target Analytes	% Rec	% Rec	% Rec
2,4'-DDE	3	101	98
4,4'-DDE	95	100	100
2,4'-DDD	5	104	97
4,4'-DDD	96	107	98
2,4'-DDT	7	99	102
4,4'-DDT	96	103	102
Extraction Standards	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	97	98	109
4,4'-DDD, 13C12-	98	94	98
4,4'-DDT, 13C12-	97	94	87

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Sample Analysis Report

Sample Name	PDI-SC-S113C-0T01.1	Sampling Date	6-Sep-18	g	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-1	Extraction Date	20-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	5.18		
Analysis Type	Sample	Percent Solid	50.2%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-181001A05
Run Date	01-Oct-18 16:24
Final Volume	1000 uL
Dilution Factor	50
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.83	2.02	0.24	M,J		19
4,4'-DDE	11.36	12.7	0.28	M,J		19
2,4'-DDD	11.53	32.7	0.51			19
4,4'-DDD	12.04	60.5	0.68	M		19
2,4'-DDT	NotFnd	<0.76	0.76	U		19
4,4'-DDT	12.54	<1.1	1.1	M,U	0.79	19
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.35	97			
4,4'-DDD, 13C12-	125	12.03	89			
4,4'-DDT, 13C12-	125	12.54	65			

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name Duplicate of PDI-SC-S113C-0T01.1
ALS Sample ID WG2879551-4
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix QC

Sampling Date n/a
Extraction Date 20-Sep-18
Sample Size 5.26 g
Percent Solid 51.3%
Split Ratio 1

Approved:
Ella Gdyczynski
 --e-signature--
 02-Oct-2018

Run Information **Run 1**
Filename 6-181001A06
Run Date 01-Oct-18 16:44
Final Volume 1000 uL
Dilution Factor 50
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.82	2.97	0.23	J		19
4,4'-DDE	11.35	13.2	0.27	J		19
2,4'-DDD	11.52	28.8	0.44			19
4,4'-DDD	12.04	56.9	0.55	M		19
2,4'-DDT	NotFnd	<0.60	0.60	U		19
4,4'-DDT	12.54	<0.90	0.90	M,U	0.45	19
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.34	99			
4,4'-DDD, 13C12-	125	12.03	81			
4,4'-DDT, 13C12-	125	12.53	63			

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	PDI-SC-S113C-1.1TO3.1	Sampling Date	6-Sep-18	g	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-2	Extraction Date	20-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	8.32		
Analysis Type	Sample	Percent Solid	79.8%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180928A18
Run Date	28-Sep-18 22:04
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.83	0.0740	0.0080	J		1.2
4,4'-DDE	11.36	0.424	0.0095	J		1.2
2,4'-DDD	11.53	2.20	0.019			1.2
4,4'-DDD	12.05	5.22	0.022			1.2
2,4'-DDT	NotFnd	<0.025	0.025	U		1.2
4,4'-DDT	12.55	0.189	0.035	J		1.2
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.35	105	21-125		
4,4'-DDD, 13C12-	125	12.04	83	5-150		
4,4'-DDT, 13C12-	125	12.54	73	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S113C-3.1T05.6	Sampling Date	6-Sep-18	g	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-3	Extraction Date	20-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	8.33		
Analysis Type	Sample	Percent Solid	80.0%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180928A19
Run Date	28-Sep-18 22:24
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		Ret.	Conc.	EDL	EMPC	LQL
		Time	ng / g	ng / g		
2,4'-DDE		NotFnd	<0.0088	0.0088	U	1.2
4,4'-DDE		11.36	0.0436	0.010	J	1.2
2,4'-DDD		11.53	0.245	0.018	J	1.2
4,4'-DDD		12.05	0.618	0.022	J	1.2
2,4'-DDT		NotFnd	<0.024	0.024	U	1.2
4,4'-DDT		NotFnd	<0.035	0.035	U	1.2
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.35	104	21-125		
4,4'-DDD, 13C12-	125	12.04	80	5-150		
4,4'-DDT, 13C12-	125	12.54	69	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S113C-5.6TO6.6	Sampling Date	6-Sep-18	g	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-4	Extraction Date	20-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	8.04		
Analysis Type	Sample	Percent Solid	79.6%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180928A20
Run Date	28-Sep-18 22:45
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	NotFnd	<0.012	0.012		U	1.2
4,4'-DDE	NotFnd	<0.014	0.014		U	1.2
2,4'-DDD	11.52	<0.057	0.022		J,R 0.057	1.2
4,4'-DDD	12.03	0.122	0.028		J	1.2
2,4'-DDT	NotFnd	<0.031	0.031		U	1.2
4,4'-DDT	NotFnd	<0.043	0.043		U	1.2
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.34	97	21-125		
4,4'-DDD, 13C12-	125	12.03	75	5-150		
4,4'-DDT, 13C12-	125	12.53	64	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S260-0TO1.3
ALS Sample ID L2161800-5
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 6-Sep-18
Extraction Date 20-Sep-18
Sample Size 4.74 g
Percent Solid 45.5%
Split Ratio 1

Approved:
Ella Gdyczynski
 --e-signature--
 02-Oct-2018

Run Information **Run 1**
Filename 6-180928A21
Run Date 28-Sep-18 23:05
Final Volume 1000 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.83	3.73	0.0097			2.1
4,4'-DDE	11.36	25.7	0.011			2.1
2,4'-DDD	11.53	112	0.022			2.1
4,4'-DDD	12.04	292	0.024			2.1
2,4'-DDT	12.10	24.6	0.027			2.1
4,4'-DDT	12.55	356	0.040			2.1
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.35	109	21-125		
4,4'-DDD, 13C12-	125	12.04	93	5-150		
4,4'-DDT, 13C12-	125	12.54	77	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U Indicates that this compound was not detected above the EDL.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S260-1.3TO2.6	Sampling Date	6-Sep-18	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-6	Extraction Date	20-Sep-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.81 g	
Analysis Type	Sample	Percent Solid	56.4%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-181001A10
Run Date	01-Oct-18 18:05
Final Volume	1000 uL
Dilution Factor	50
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.82	12.8	0.22	J		17
4,4'-DDE	11.35	58.1	0.26			17
2,4'-DDD	11.52	567	0.41			17
4,4'-DDD	12.04	1070	0.45			17
2,4'-DDT	12.09	91.9	0.50			17
4,4'-DDT	12.54	1340	0.94			17
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.34	97			
4,4'-DDD, 13C12-	125	12.03	80			
4,4'-DDT, 13C12-	125	12.53	56			

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S260-2.6TO4.2	Sampling Date	6-Sep-18	g	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-7	Extraction Date	20-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	7.41		
Analysis Type	Sample	Percent Solid	71.8%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-181001A09
Run Date	01-Oct-18 17:45
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.84	0.205	0.015	J		1.4
4,4'-DDE	11.37	0.942	0.017	J		1.4
2,4'-DDD	11.53	8.90	0.026			1.4
4,4'-DDD	12.04	16.7	0.035			1.4
2,4'-DDT	12.10	1.53	0.039			1.4
4,4'-DDT	12.54	15.0	0.069			1.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.36	91			
4,4'-DDD, 13C12-	125	12.04	65			
4,4'-DDT, 13C12-	125	12.54	44			

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S260-4.2T06
ALS Sample ID L2161800-8
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 6-Sep-18
Extraction Date 20-Sep-18
Sample Size 8.24 g
Percent Solid 80.6%
Split Ratio 1

Approved:
Ella Gdyczynski
 --e-signature--
 02-Oct-2018

Run Information **Run 1**
Filename 6-181001A08
Run Date 01-Oct-18 17:24
Final Volume 1000 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	NotFnd	<0.014	0.014	U		1.2
4,4'-DDE	11.36	<0.023	0.017	M,J,R	0.023	1.2
2,4'-DDD	11.53	<0.025	0.025	U	0.022	1.2
4,4'-DDD	12.05	<0.037	0.037	U	0.023	1.2
2,4'-DDT	NotFnd	<0.041	0.041	U		1.2
4,4'-DDT	12.55	<0.075	0.075	U	0.030	1.2
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.35	80			
4,4'-DDD, 13C12-	125	12.04	49			
4,4'-DDT, 13C12-	125	12.54	35			

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	PDI-SC-S260-6TO7	Sampling Date	6-Sep-18	g	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-9	Extraction Date	20-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	7.76		
Analysis Type	Sample	Percent Solid	77.4%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180928A25
Run Date	29-Sep-18 00:26
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		Ret.	Conc.	EDL	EMPC	LQL
		Time	ng / g	ng / g		
	2,4'-DDE	NotFnd	<0.0085	0.0085	U	1.3
	4,4'-DDE	11.36	0.0286	0.010	J	1.3
	2,4'-DDD	11.53	0.0489	0.014	J	1.3
	4,4'-DDD	12.05	0.0787	0.019	J	1.3
	2,4'-DDT	NotFnd	<0.020	0.020	U	1.3
	4,4'-DDT	12.55	0.0982	0.034	J	1.3
Extraction Standards	ng					
	4,4'-DDE, 13C12-	125	11.35	100	21-125	
	4,4'-DDD, 13C12-	125	12.04	70	5-150	
	4,4'-DDT, 13C12-	125	12.54	53	5-120	

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S019-0TO2	Sampling Date	6-Sep-18	g	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-10	Extraction Date	20-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	5.77		
Analysis Type	Sample	Percent Solid	56.3%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180928A26
Run Date	29-Sep-18 00:46
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		Ret.	Conc.	EDL	EMPC	LQL
		Time	ng / g	ng / g	Flags	
2,4'-DDE		10.82	0.623	0.0069	J	1.7
4,4'-DDE		11.35	11.8	0.0082		1.7
2,4'-DDD		11.52	2.15	0.012		1.7
4,4'-DDD		12.03	7.15	0.014	M	1.7
2,4'-DDT		12.09	0.169	0.015	M,J	1.7
4,4'-DDT		12.53	0.386	0.023	J	1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.34	80	21-125		
4,4'-DDD, 13C12-	125	12.03	69	5-150		
4,4'-DDT, 13C12-	125	12.53	54	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S019-2TO4	Sampling Date	6-Sep-18	g	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-11	Extraction Date	20-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	5.59		
Analysis Type	Sample	Percent Solid	54.8%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180928A27
Run Date	29-Sep-18 01:06
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		Ret.	Conc.	EDL	EMPC	LQL
		Time	ng / g	ng / g	Flags	
2,4'-DDE		10.83	1.07	0.0089	J	1.8
4,4'-DDE		11.36	13.8	0.010		1.8
2,4'-DDD		11.54	3.58	0.020		1.8
4,4'-DDD		12.05	10.0	0.026	M	1.8
2,4'-DDT		12.11	0.190	0.028	M,J	1.8
4,4'-DDT		12.55	0.325	0.050	J	1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.36	105	21-125		
4,4'-DDD, 13C12-	125	12.04	77	5-150		
4,4'-DDT, 13C12-	125	12.54	57	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	PDI-SC-S019-4TO6	Sampling Date	6-Sep-18	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-12	Extraction Date	20-Sep-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.66 g	
Analysis Type	Sample	Percent Solid	56.1%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180928A28
Run Date	29-Sep-18 01:26
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.82	0.938	0.0094	J		1.8
4,4'-DDE	11.35	12.7	0.011			1.8
2,4'-DDD	11.52	2.95	0.018			1.8
4,4'-DDD	12.04	9.44	0.024			1.8
2,4'-DDT	12.08	<0.11	0.027	J,R	0.11	1.8
4,4'-DDT	12.54	0.240	0.046	J		1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.34	109	21-125		
4,4'-DDD, 13C12-	125	12.03	74	5-150		
4,4'-DDT, 13C12-	125	12.53	54	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	PDI-SC-S019-6TO8	Sampling Date	6-Sep-18	g	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-13	Extraction Date	20-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	5.83		
Analysis Type	Sample	Percent Solid	57.6%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180928A29
Run Date	29-Sep-18 01:46
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.82	1.17	0.011	J		1.7
4,4'-DDE	11.35	14.2	0.013			1.7
2,4'-DDD	11.52	4.05	0.023			1.7
4,4'-DDD	12.03	14.0	0.033	M		1.7
2,4'-DDT	12.09	0.230	0.036	M,J		1.7
4,4'-DDT	12.54	14.7	0.057			1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.34	78	21-125		
4,4'-DDD, 13C12-	125	12.03	54	5-150		
4,4'-DDT, 13C12-	125	12.53	40	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	PDI-SC-S019-8TO10	Sampling Date	6-Sep-18	g	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-14	Extraction Date	20-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	5.91		
Analysis Type	Sample	Percent Solid	58.8%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180928A30
Run Date	29-Sep-18 02:06
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.82	2.22	0.0079			1.7
4,4'-DDE	11.35	16.8	0.0093			1.7
2,4'-DDD	11.52	15.1	0.017			1.7
4,4'-DDD	12.04	35.8	0.021			1.7
2,4'-DDT	12.09	<0.26	0.024	J,R	0.26	1.7
4,4'-DDT	12.54	1.36	0.045	J		1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.34	109	21-125		
4,4'-DDD, 13C12-	125	12.03	79	5-150		
4,4'-DDT, 13C12-	125	12.53	55	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S019-10T012	Sampling Date	6-Sep-18	g	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-15	Extraction Date	20-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	5.85		
Analysis Type	Sample	Percent Solid	58.3%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180928A31
Run Date	29-Sep-18 02:26
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	Ret.	Conc.	EDL	EMPC	
	Time	ng / g	ng / g	Flags	ng / g
2,4'-DDE	10.82	1.38	0.0096	J	1.7
4,4'-DDE	11.35	8.37	0.011		1.7
2,4'-DDD	11.52	8.42	0.020		1.7
4,4'-DDD	12.04	16.9	0.026	M	1.7
2,4'-DDT	12.08	<0.23	0.028	M,J,R	0.23
4,4'-DDT	12.54	0.652	0.049	J	1.7
Extraction Standards	ng				
4,4'-DDE, 13C12-	125	11.34	110	21-125	
4,4'-DDD, 13C12-	125	12.03	80	5-150	
4,4'-DDT, 13C12-	125	12.53	58	5-120	

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S019-12T013.7

ALS Sample ID L2161800-16
 Analysis Method EPA 1699 (mod)
 Analysis Type Sample
 Sample Matrix Sediment

Sampling Date 6-Sep-18
 Extraction Date 20-Sep-18
 Sample Size 6.07 g
 Percent Solid 58.8%
 Split Ratio 1

Approved:
Ella Gdyczynski
 --e-signature--
 02-Oct-2018

Run Information

Run 1

Filename 6-180928A32
 Run Date 29-Sep-18 02:47
 Final Volume 1000 uL
 Dilution Factor 5
 Analysis Units ng/g
 Instrument - Column HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.83	2.26	0.0087			1.6
4,4'-DDE	11.36	11.9	0.010			1.6
2,4'-DDD	11.54	54.5	0.016			1.6
4,4'-DDD	12.05	115	0.021			1.6
2,4'-DDT	12.11	6.55	0.023			1.6
4,4'-DDT	12.55	34.7	0.042			1.6
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.36	113	21-125		
4,4'-DDD, 13C12-	125	12.04	88	5-150		
4,4'-DDT, 13C12-	125	12.55	60	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
 LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.

U Indicates that this compound was not detected above the EDL.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S019-13.7TO14.7	Sampling Date	6-Sep-18	g	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-17	Extraction Date	20-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	6.38		
Analysis Type	Sample	Percent Solid	61.7%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180928A33
Run Date	29-Sep-18 03:07
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.83	0.772	0.0092	J		1.6
4,4'-DDE	11.36	5.56	0.011			1.6
2,4'-DDD	11.53	7.21	0.017			1.6
4,4'-DDD	12.04	13.7	0.025	M		1.6
2,4'-DDT	12.08	0.277	0.028	M,J		1.6
4,4'-DDT	12.54	0.346	0.045	J		1.6
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.35	114	21-125		
4,4'-DDD, 13C12-	125	12.04	77	5-150		
4,4'-DDT, 13C12-	125	12.54	55	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S019-10T012D	Sampling Date	6-Sep-18	g	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	L2161800-18	Extraction Date	20-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	5.90		
Analysis Type	Sample	Percent Solid	58.5%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180928A34
Run Date	29-Sep-18 03:27
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.83	2.32	0.0094			1.7
4,4'-DDE	11.36	13.2	0.011			1.7
2,4'-DDD	11.53	14.6	0.016			1.7
4,4'-DDD	12.05	28.1	0.020	M		1.7
2,4'-DDT	12.09	0.439	0.023	M,J		1.7
4,4'-DDT	12.55	0.707	0.042	J		1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.35	110	21-125		
4,4'-DDD, 13C12-	125	12.04	77	5-150		
4,4'-DDT, 13C12-	125	12.54	54	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-RB-SS-180906	Sampling Date	6-Sep-18	L	Approved: <i>R. Bakhtiari</i> --e-signature-- 28-Sep-2018
ALS Sample ID	L2161800-19	Extraction Date	12-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	1.05		
Analysis Type	Sample	Percent Solid	n/a		
Sample Matrix	Water	Split Ratio	1		

Run Information	Run 1
Filename	6-180926B36
Run Date	27-Sep-18 03:41
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/L
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		Ret.	Conc.	EDL	EMPC	LQL
		Time	ng / L	ng / L	Flags	
2,4'-DDE		NotFnd	<0.15	0.15	U	9.5
4,4'-DDE		NotFnd	<0.19	0.19	U	9.5
2,4'-DDD		NotFnd	<0.34	0.34	U	9.5
4,4'-DDD		NotFnd	<0.18	0.18	U	9.5
2,4'-DDT		NotFnd	<0.21	0.21	U	9.5
4,4'-DDT		NotFnd	<0.39	0.39	U	9.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.35	45	21-125		
4,4'-DDD, 13C12-	125	12.03	68	5-150		
4,4'-DDT, 13C12-	125	12.53	40	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.

LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.

U Indicates that this compound was not detected above the EDL.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-RB-LL-180907

ALS Sample ID L2161800-20
 Analysis Method EPA 1699 (mod)
 Analysis Type Sample
 Sample Matrix Water

Sampling Date 7-Sep-18

Extraction Date 12-Sep-18

Sample Size 0.95 L

Percent Solid n/a

Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Sep-2018

Run Information

Run 1

Filename 6-180926B37
 Run Date 27-Sep-18 04:01
 Final Volume 1000 uL
 Dilution Factor 5
 Analysis Units ng/g
 Instrument - Column HRMS-6 HP5MSUSR280851H

Target Analytes		Ret.	Conc.	EDL	EMPC	
		Time	ng / g	ng / g	Flags	LQL
2,4'-DDE		NotFnd	<0.24	0.24	U	11
4,4'-DDE		NotFnd	<0.31	0.31	U	11
2,4'-DDD		NotFnd	<0.51	0.51	U	11
4,4'-DDD		NotFnd	<0.18	0.18	U	11
2,4'-DDT		NotFnd	<0.21	0.21	U	11
4,4'-DDT		NotFnd	<0.42	0.42	U	11
Extraction Standards		ng				
4,4'-DDE, 13C12-	125	11.35	26	21-125		
4,4'-DDD, 13C12-	125	12.04	63	5-150		
4,4'-DDT, 13C12-	125	12.54	31	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.

LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.

U Indicates that this compound was not detected above the EDL.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-RB-AL-180907	Sampling Date	7-Sep-18	L	Approved: <i>R. Bakhtiari</i> --e-signature-- 28-Sep-2018
ALS Sample ID	L2161800-21	Extraction Date	12-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	1.06		
Analysis Type	Sample	Percent Solid	n/a		
Sample Matrix	Water	Split Ratio	1		

Run Information	Run 1
Filename	6-180926B38
Run Date	27-Sep-18 04:21
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		Ret.	Conc.	EDL	EMPC	LQL
		Time	ng / g	ng / g		
2,4'-DDE		NotFnd	<0.13	0.13	U	9.4
4,4'-DDE		NotFnd	<0.17	0.17	U	9.4
2,4'-DDD		NotFnd	<0.25	0.25	U	9.4
4,4'-DDD		NotFnd	<0.15	0.15	U	9.4
2,4'-DDT		NotFnd	<0.18	0.18	U	9.4
4,4'-DDT		NotFnd	<0.30	0.30	U	9.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.34	47	21-125		
4,4'-DDD, 13C12-	125	12.03	64	5-150		
4,4'-DDT, 13C12-	125	12.53	39	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

SVOC DATA PACKAGE

SECTION 3: METHOD SUMMARY

OC Pesticide METHOD SUMMARY
Method EPA 1699

Introduction:

This summary is to provide ALSE Burlington OC pesticide method details in order to provide persons reviewing or validating this data package sufficient information to re-construct the sample calculation, data verification and review. It incorporates the analysis of organochlorine pesticides via EPA method 1699. Deviations from this reference method are documented in ALS Standard Operating Procedures (available upon request) and in this Method Summary.

Any deviations to what is listed herein or in the ALS Standard Operating Procedures would be listed in the project narrative.

To avoid the confusion and conflicting nomenclature within the performance based methods, we have defined the labeled standards in terms relating to the time of addition to the sample or extract. Therefore;

- Laboratory Surrogate (when provided/requested by the client) are added prior to sample extraction
- The Field or Sampling Standards (where used) are added prior to field sampling
- The Extraction Standards are added prior to extraction
- The GPC Recovery Standard is added (when used) prior to Gel Permeation Chromatographic cleanup
- The Clean-up Standards (where used) are added prior to extract clean-up
- The Injection Standards are added prior to extract injection.

Additional method information, such as Instrumental Descriptors, is documented in ALS Standard Operating Procedures and available upon request.

Calibration Standard Levels:

Seven levels of standard are available for calibration as listed in Table 1. These targets give a wide range of responses on the analytical instruments, thus it is expected that for any given target, either the lowest standard level(s) or the highest standard level(s) may be excluded due to poor response, poor linearity, or detector saturation. With seven levels of standard, it is expected that at least 5 points can be used for calibration for each target.

Table 1: Calibration Standards (conc in ng/mL)

		CS1	CS2	CS3	CS4	CS5	CS6	CS7
Natives	24'-DDE	2	7.5	20	50	150	400	1200
	44'-DDE	2	7.5	20	50	150	400	1200
	24'-DDD	2	7.5	20	50	150	400	1200
	44'-DDD	2	7.5	20	50	150	400	1200
	24'-DDT	2	7.5	20	50	150	400	1200
	44'-DDT	2	7.5	20	50	150	400	1200
Extraction Standard	13C12-44'-DDE	250	250	250	250	250	250	250
	13C12-44'-DDD	250	250	250	250	250	250	250
	13C12-44'-DDT	250	250	250	250	250	250	250
Injection Standard	13C12-PCB-9	100	100	100	100	100	100	100
	13C12-PCB-52	100	100	100	100	100	100	100
	13C12-PCB-101	100	100	100	100	100	100	100

Calibration and Quality Control Limits

The calibration and QC Sample control limits are presented in Table 2 below. For the lowest standard used for initial calibration, and for each calibration verification CS3, the signal to noise ratio for each ion for both labelled and non-labelled analytes must be greater than or equal to 10:1

		Calibration		Samples and QC Samples	
		Initial Cal. %RSD	Cal. Ver. %Exp	LCS % Rec	Samples % Rec
Natives	24'-DDE	35	75-125	50-120	
	44'-DDE	20	75-125	50-120	
	24'-DDD	35	75-125	42-120	
	44'-DDD	20	75-125	42-120	
	24'-DDT	35	75-125	50-120	
	44'-DDT	20	75-125	50-120	
Extraction Standards	13C12-44'-DDE	35	70-130	21-125	21-125
	13C12-44'-DDD	35	70-130	13-200	5-150
	13C12-44'-DDT	35	70-130	13-200	5-120

Additional Continuing Calibration Details:

After initial calibration is established, a CS4 standard is injected as a Continuing Calibration Verification (CCV) at the beginning of every 12 hour shift in which samples are analyzed. If the following performance criteria are met, analysis of samples may proceed:

- Ion abundance ratios are within their respective theoretical limits (see Table 3)
- All targets have a s/n ratio of at least 10:1
- The RT of each analyte is within 15 seconds of that in the initial calibration
- Endin and DDT breakdown is less than 20% (see Section 5.2.4.2)
- The %Diff is within the CCV limits (see Table 2)

If these performance criteria are not met, GC maintenance is performed or the system is adjusted and a new CCV is injected, or a new initial calibration is run.

Mid-run Calibration Verification:

While the EPA 1699 does not require a post-run calibration verification standard to be run, it is recognized that responses and/or relative responses of some targets may change significantly during HRMS analysis due to sample related contamination of GC or MS components. This problem is compounded by chemical dissimilarities between some targets and their quantification reference standards in the case of internal standard quantification. Enhanced quantification and a measure of confidence in sample results obtained during an analytical shift can be attained by injecting a CS4 calibration verification (VER) standard in the middle of, and at the end of a 12-hour run, and quantifying samples against the average of bracketing calibration standards where improved results would be achieved.

a) Mid-Run VER:

If this analysis meets the performance criteria for a pre-run CCV, then all of the samples preceding the mid-run VER can be quantified vs. the initial calibration, and analysis can proceed. If the mid-run VER does not meet pre-run CCV criteria, the preceding samples can be quantified vs. bracketing calibration runs (using the pre-run CCV and mid-run VER as a two-point calibration) and analysis can proceed, provided that the following criteria are met:

- Ion abundance ratios are within their respective theoretical limits (see Table 1) or within 15% of the ratios in the pre-run CCV
- All targets have a s/n ratio of at least 10:1
- The RT of each analyte is within 15 seconds of that in the initial calibration
- Endin and DDT breakdown is less than 20%
- The %RPD of the mid-run VER vs. the pre-run CCV meets the CCV %Diff limits (See Table 2)

If the mid-run VER does not meet the above criteria either, analysis cannot continue without corrective action (samples analyzed after the mid-run VER in an automated sequence must be re-analyzed). The samples preceding the failing mid-run VER may be flagged and reported, but must be assessed for impact on data quality:

- If a failing native target is present in any of the preceding samples above the Method Detection Limit (or above the client's lower required Detection Limit, if known), that sample must be re-analyzed for that target.
- If a failing native target's Estimated Detection Limit is above the Method Detection Limit (or above the client's lower required Detection Limit, if known) due to deterioration of system performance, that sample must be re-analyzed for that target.

a) Post-Run VER:

If this analysis meets the performance criteria for a pre-run CCV, then all of the samples preceding the post-run VER can be quantified vs. the initial calibration. If the post-run VER does not meet pre-run CCV criteria, the preceding samples can be quantified vs. bracketing calibration runs (using the post-run VER and mid-run VER as a two-point calibration) provided that the following criteria are met:

- Ion abundance ratios are within their respective theoretical limits (see Table 1) or within 15% of the ratios in the mid-run CCV
- All targets have a s/n ratio of at least 10:1
- The RT of each analyte is within 15 seconds of that in the initial calibration
- Endin and DDT breakdown is less than 20%
- The %RPD of the post-run VER vs. the mid-run VER meets the CCV %Diff limits (See Table 2)

If the post-run VER does not meet the above criteria either, the samples preceding the failing post-run VER may be flagged and reported, but must be assessed for impact on data quality:

- If a failing native target is present in any of the preceding samples above the Method Detection Limit (or above the client's lower required Detection Limit, if known), that sample must be re-analyzed for that target.
- If a failing native target's Estimated Detection Limit is above the Method Detection Limit (or above the client's lower required Detection Limit, if known) due to deterioration of system performance, that sample must be re-analyzed for that target.

Reporting Limits:

Unless indicated in the otherwise, native target data is reported down to 2.5:1 signal to noise for each isomer grouping for each extract injection. This is consistent to SW846 8290 defined protocols (i.e. EDL or Estimated Detection Limit) and is commonly applied throughout the industry to any and all performance based HRMS methods.

Method Blank:

The method blank levels must be below the response to the lowest calibration standard used for initial calibration.

MS/MSD (where required):

The % relative difference between the MS and MSD spike recoveries should be less than or equal to 20%.

Instrument/Run Performance Criteria:

a) Chromatographic Performance

For the DB-5 column, 44'-DDT and 24'-DDT (or the labelled analogues) must be uniquely resolved to a valley height of less than 60% of the shorter of the two peaks.

b) DDT and Endrin Breakdown

A custom standard (HROCP-GC_BD#1) is injected to measure the breakdown of endrin and DDT during the run. This standard must be injected at the beginning and end of each 12 hour shift, and it is also recommended that it be injected along with the mid-run CCV where used. This standard contains 13C12-4,4'-DDT, 13C12-endrin, and native endrin, endrin aldehyde and endrin ketone.

- For measurement of DDT breakdown, measure the concentration for 13C12-44'-DDE, 13C12-44'-DDD and 13C12-44'-DDT (the labelled DDT is part of the standard, and the labelled DDE and DDD are breakdown products). Calculate breakdown using the following formula:

13C12-44'-DDT % Breakdown =

$$\frac{(\text{concentration of 13C12-44'-DDD} + \text{concentration of 13C12-44'-DDE})}{\text{concentration of 13C12-44'-DDT}} \times 100\%$$

labelled DDT = part of standard; labelled DDE and DDD = breakdown products

- Additionally, measurement of endrin breakdown can be performed. For measurement of endrin breakdown, measure the concentration of endrin, endrin aldehyde, and endrin ketone (these natives are quantified by isotope dilution vs. the 13C12-endrin). Calculate breakdown using the following formula:

Endrin % Breakdown =

$$\frac{(\text{concentration of endrin aldehyde} + \text{concentration of endrin ketone})}{\text{concentration of endrin}} \times 100\%$$

If the breakdown of endrin and/or DDT exceeds 20% in a standard, the targets are decomposing on the inlet or column, and remedial action must be taken (inlet maintenance and trimming of the analytical column) before any valid sample data can be produced. If the breakdown of DDT or endrin in a sample exceeds 20% and there is that native in the sample above the MDL, that sample will have to be reanalyzed for that target (further cleanup or dilution of that sample is recommended before reanalysis).

Breakdown exceedences can be ignored under the following circumstances:

- Where the endrin breakdown fails but DDT breakdown passes and where DDT and/or its metabolites are the only targets.
- Where the DDT breakdown fails but endrin breakdown passes and where endrin and/or its metabolites are the only targets.
- For the determination of other pesticide targets (i.e. non-DDT and non-Endrin and metabolite targets) which have a corresponding labelled extraction/internal standard of exactly the same isomer.

c) Mass Resolution:

At the beginning of and just following the end of each 12 hour run sequence, the instrument must be checked to demonstrate a resolution of 10,000 for each quantification window.

The maximum time between scans within a descriptor is 1 second.

Lock mass deviations to the average response must be less than or equal 20%.

Laboratory Duplicates:

The % relative difference between duplicates should be less than or equal to 25% but only where the response is greater than the low calibration standard.

Analyte Identification Criteria:

Ion Ratio Criteria

For all compounds, a pair of ions with a specific isotopic ratio are being monitored. To have a confirmed positive response to a native or labelled OCP, that ratio must be within the theoretical limits in Table 1, or within 15% of the observed values on the most recent CS4 analysis.

Signal to Noise Criteria

The signal to noise ratio for each quantification and confirmation ion for labelled and non-labelled analytes must be greater than or equal to 10:1 for the initial calibration CS1 and for each calibration verification CS4. For positive identification of a native target in a sample, both ions must have a s/n ratio exceeding 2.5:1.

Matched RT on Peak Maxima

The retention time (RT) of the peak maxima for each pair of quantification ions must be no more than 2 seconds (i.e. 2 scans) difference.

Expected Retention Time (RT)

The peak must be at the expected RT

- within -1/+3 seconds of the labelled standard for natives with their own ¹³C labelled standard
- within +/- 0.008 RRT units of the RRT in the most recent CS4 analysis for targets with their own ²H labelled standard
- within +/- 0.010 RRT units of the RRT in the most recent CS4 analysis for targets without their own labelled standard

As per EPA 1699 Sections 16.5-16.6, it is possible that not all of the positive ID criteria are met. If a pesticide is deemed to be present in this case by the experienced spectroscopist, the result may be flagged as "this result is unconfirmed and must not be used for permitting or regulatory compliance purposes". If the ion abundance ratio criteria are not met, the result must also include an "R" flag.

Table 3: Monitored Masses, Ion Abundance Ratios, and Quantitation/RT References

Entry	Native Standard	Quantification Method	Quantification vs. Entry #:	Quantitation Ion	Confirmation Ion	Theoretical Ion Abundance ratio	Ion Abundance Ratio Tolerance
1	24'-DDE	rel_int	7	246.0003	247.9974	1.56	0.25
2	44'-DDE	rel_int	7	246.0003	247.9974	1.56	0.25
3	24'-DDD	rel_int	8	235.0082	237.0053	1.56	0.25
4	44'-DDD	rel_int	8	235.0082	237.0053	1.56	0.25
5	24'-DDT	rel_int	9	235.0082	237.0053	1.56	0.25
6	44'-DDT	rel_int	9	235.0082	237.0053	1.56	0.25
Extraction Standard							
7	13C12-44'-DDE	rel_int	10	258.0405	260.0376	1.56	0.25
8	13C12-44'-DDD	rel_int	10	247.0483	249.0454	1.56	0.25
9	13C12-44'-DDT	rel_int	10	247.0483	249.0454	1.56	0.25
Injection Standard							
10	13C12-PCB-52	abs_int	-	301.9625	303.9597	0.77	0.15

Data Calculations:

a) Analyte Concentrations:

The relative response factor of each target relative to the standard against which it is to be calculated is determined using the area responses of both quantification ions via equation 9.1.

In cases where a native target is calculated against an exact labelled analogue, the quantification will be considered to be by isotope dilution. In other cases, the quantification will be considered to be by internal standard.

$$\text{RRF} = \frac{(A1_t + A2_t) C_s}{(A1_s + A2_s) C_t} \quad \text{Equ. 9.1}$$

Where,

$A1_t + A2_t$ = The areas of the two quantification ions for the target analyte

$A1_s + A2_s$ = The areas of the two quantification ions for the labelled compound against which the target analyte will be calculated.

C_t = The concentration in the calibration standard of the target analyte.

C_s = The concentration in the calibration standard of the labelled compound against which the target will be calculated.

For all analytes to be quantified and from the initial calibration series of standard injections, a table of RRFs is prepared. The relative standard deviation (%RSD, or the coefficient of variance) is checked to confirm that appropriate method criteria has been met as listed in Table 3. The average of the five or six levels of for each analyte, RRF_{av} is applied for quantification of samples according to Equations 9.2 and 9.3 below.

$$\text{Amount in sample (ng)} = \frac{(A1_n + A2_n) Q_l}{(A1_l + A2_l) (\text{RRF}_{av})} \quad \text{Equ. 9.2}$$

$$\text{Concentration in sample (ng/g or ng/L)} = \frac{(A1_n + A2_n) Q_l}{(A1_l + A2_l) (\text{RRF}_{av}) (W_s)} \quad \text{Equ. 9.3}$$

Where,

Q_l = The amount (pg) of labelled compound added to the sample

W_s = The weight (g) or volume (l) of sample

b) Extraction, Clean-up, and Sampling Standard Recovery Calculation:

The extraction, clean-up, and sampling standard recoveries are determined by Equation 9.4 below.

$$\% \text{ Recovery} = (\text{Amount in sample})/(\text{Amount added to sample}) \times 100 \quad \text{Equ. 9.4}$$

c) Estimated Detection Limit

$$\text{EDL} = \frac{2.5 \times H_x \times Q_{es}}{H_{es} \times W \times \text{RRF}_{av}} \quad \text{Equ. 9.5}$$

Where,

EDL = estimated detection limit for native targets

H_x = sum of the height of the noise level for each quantification ions for the unlabeled target

H_{es} = Sum of the heights of responses of both quantification ions for the labelled extraction standard.

W = weight of volume of sample

RRF_{av} = average relative response factor

Q_{es} = Amount of extraction standard added

Chromatogram Annotation Codes

All manually integrated peaks are expanded and reprinted with the following annotations:

* Analyst Initials	AA
* Date	YYMMDD
* integration code	CC
The Syntax is:	Example:
AAYYMMDDCC	SK111220MB

Code	Mnemonic	Description
MB	Manual Baseline	The peak was manually integrated because the initial baseline was determined incorrectly by the software
MS	Manual Split	The peak was manually integrated because the peak was incorrectly or not split by the software
MJ/MC	Manual Join/Manual Combine	The peak was manually integrated because the peak was split by the software and the peak should be integrated as a single peak
MA	Manual Add	The peak was manually integrated because the signal:noise ratio was judged to be >2.5
MD	Manual Delete	The peak was excluded because the signal:noise ratio was judged to be <2.5
MX	Manual Exclude	The peak was excluded due to an interference
MT	Manual Time	The peak retention time was manually chosen

The following explanatory annotation codes may appear on the chromatograms of peaks that have been reviewed:

Code	Mnemonic	Description
+	Detected Peak	A peak was detected at this mass and retention time that was above 2.5:1 signal to noise
<	Below Detection Limit	The signal at this mass and retention time was below 2.5:1 signal to noise
EMPC	Estimated Maximum Possible Concentration	The signal at this mass and retention time is an interference such that the target compound could not be confirmed
X-RT	Not Detected due to Retention Time non-conformance	The signal at this retention time could not be used to positively identify the target compound because of retention time non-conformance (apex of quantification and confirmation ions do not maximize within the same two seconds, or the retention time of the peak does not fall within the expected range with respect to its labeled analogue)
X-LOC	Not Detected due to interference from a higher level of chlorination	The signal at this retention time is attributable to a fragment from a co-eluting compound at a higher level of chlorination, and cannot be used to positively identify the target. The result is expressed as an Estimated Maximum Possible Concentration (EMPC)
X-DPE	Not Detected due to diphenyl ether interference	The signal at this retention time is attributable to interference from a chlorinated diphenyl ether, and cannot be used to positively identify the target. The result is expressed as an Estimated Maximum Possible Concentration (EMPC)
X-IF	Not Detected due to interference	The signal at this retention time is attributable to a co-eluting interference, and cannot be used to positively identify the target. The result is expressed as an Estimated Maximum Possible Concentration (EMPC)

SVOC DATA PACKAGE

SECTION 4: CALIBRATION DATA

Including:

for Multi-Point Calibration(s)

- Multi-Point Calibration Tables
- Individual Quantitation Reports

for Continuing Calibration(s)

- Individual Quantitation Reports

ALS Life sciences

Calibration Summary Report

Calibration Level	Filename	Run Date
CS-1	6-180928A03	28-Sep-2018 17:02
CS-2	6-180928A02	28-Sep-2018 16:42
CS-3	6-180928A07	28-Sep-2018 18:23
CS-4	6-180928A06	28-Sep-2018 18:02
CS-5	6-180928A05	28-Sep-2018 17:42
CS-6	6-180928A04	28-Sep-2018 17:22

Approved: *Ella Gdyczynski*
 --e-signature--
 02-Oct-2018

Target Analytes	Relative Response Factors						Mean	% RSD
	CS-1	CS-2	CS-3	CS-4	CS-5	CS-6		
2,4'-DDE	1.246	1.326	1.243	1.379	1.470	1.492	1.359	8%
4,4'-DDE	1.130	1.164	1.108	1.155	1.195	1.154	1.151	3%
2,4'-DDD	1.100	1.192	1.097	1.177	1.270	1.264	1.183	6%
4,4'-DDD	1.167	1.269	1.177	1.214	1.302	1.235	1.227	4%
2,4'-DDT	1.144	1.157	0.991	1.116	1.099	1.167	1.112	6%
4,4'-DDT	1.071	1.064	1.034	1.070	1.124	1.104	1.078	3%
Extraction Standards								
4,4'-DDE, 13C12-	0.932	0.805	0.928	0.887	0.917	0.908	0.896	5%
4,4'-DDD, 13C12-	0.784	0.658	0.822	0.804	0.856	0.908	0.805	10%
4,4'-DDT, 13C12-	0.575	0.487	0.679	0.627	0.704	0.709	0.630	14%

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS1-089**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180928A03
 Inst # HRMS-6
 Column HP5MSUSR280851H

Run Date 28-Sep-2018 17:02

Approved: *Ella Gdyczynski*
 --e-signature--
 02-Oct-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.83	1.59	2.00	1.29E+05	1.246
4,4'-DDE	11.36	1.57	2.00	1.17E+05	1.130
2,4'-DDD	11.53	1.69	2.00	9.59E+04	1.100
4,4'-DDD	12.04	1.62	2.00	1.02E+05	1.167
2,4'-DDT	12.1	1.55	2.00	7.32E+04	1.144
4,4'-DDT	12.55	1.65	2.00	6.86E+04	1.071

Extraction Standards

4,4'-DDE, 13C12-	11.35	1.53	250.00	1.30E+07	0.932
4,4'-DDD, 13C12-	12.04	1.58	250.00	1.09E+07	0.784
4,4'-DDT, 13C12-	12.54	1.59	250.00	8.00E+06	0.575

Labeled Injection Standards

13C12-PCB-52 (IS)	9.48	0.79	100.00	5.56E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS2-089**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180928A02
 Inst # HRMS-6
 Column HP5MSUSR280851H

Run Date 28-Sep-2018 16:42

Approved: *Ella Gdyczynski*
 --e-signature--
 02-Oct-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.82	1.56	7.50	4.89E+05	1.326
4,4'-DDE	11.35	1.56	7.50	4.30E+05	1.164
2,4'-DDD	11.52	1.64	7.50	3.60E+05	1.192
4,4'-DDD	12.04	1.64	7.50	3.84E+05	1.269
2,4'-DDT	12.1	1.64	7.50	2.59E+05	1.157
4,4'-DDT	12.54	1.61	7.50	2.38E+05	1.064
Extraction Standards					
4,4'-DDE, 13C12-	11.34	1.56	250.00	1.23E+07	0.805
4,4'-DDD, 13C12-	12.03	1.59	250.00	1.01E+07	0.658
4,4'-DDT, 13C12-	12.54	1.58	250.00	7.45E+06	0.487
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.48	0.79	100.00	6.12E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS3-089**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180928A07 Inst # HRMS-6 Column HP5MSUSR280851H Run Date 28-Sep-2018 18:23

Approved: *Ella Gdyczynski*
 --e-signature--
 02-Oct-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.82	1.57	20.00	1.40E+06	1.243
4,4'-DDE	11.35	1.57	20.00	1.25E+06	1.108
2,4'-DDD	11.53	1.67	20.00	1.09E+06	1.097
4,4'-DDD	12.04	1.65	20.00	1.17E+06	1.177
2,4'-DDT	12.1	1.66	20.00	8.15E+05	0.991
4,4'-DDT	12.54	1.64	20.00	8.50E+05	1.034

Extraction Standards

4,4'-DDE, 13C12-	11.35	1.54	250.00	1.41E+07	0.928
4,4'-DDD, 13C12-	12.04	1.58	250.00	1.24E+07	0.822
4,4'-DDT, 13C12-	12.54	1.58	250.00	1.03E+07	0.679

Labeled Injection Standards

13C12-PCB-52 (IS)	9.48	0.78	100.00	6.06E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS4-089**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180928A06
 Inst # HRMS-6
 Column HP5MSUSR280851H

Run Date
 28-Sep-2018 18:02

Approved: *Ella Gdyczynski*
 --e-signature--
 02-Oct-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.82	1.57	50.00	3.48E+06	1.379
4,4'-DDE	11.35	1.57	50.00	2.92E+06	1.155
2,4'-DDD	11.53	1.62	50.00	2.69E+06	1.177
4,4'-DDD	12.04	1.64	50.00	2.78E+06	1.214
2,4'-DDT	12.1	1.63	50.00	1.99E+06	1.116
4,4'-DDT	12.54	1.62	50.00	1.91E+06	1.070

Extraction Standards

4,4'-DDE, 13C12-	11.35	1.55	250.00	1.26E+07	0.887
4,4'-DDD, 13C12-	12.03	1.58	250.00	1.14E+07	0.804
4,4'-DDT, 13C12-	12.54	1.57	250.00	8.92E+06	0.627

Labeled Injection Standards

13C12-PCB-52 (IS)	9.48	0.79	100.00	5.69E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS5-089**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180928A05
 Inst # HRMS-6
 Column HP5MSUSR280851H

Run Date
 28-Sep-2018 17:42

Approved: *Ella Gdyczynski*
 --e-signature--
 02-Oct-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.82	1.57	150.00	1.21E+07	1.470
4,4'-DDE	11.35	1.58	150.00	9.82E+06	1.195
2,4'-DDD	11.52	1.64	150.00	9.74E+06	1.270
4,4'-DDD	12.04	1.61	150.00	9.98E+06	1.302
2,4'-DDT	12.09	1.61	150.00	6.93E+06	1.099
4,4'-DDT	12.54	1.64	150.00	7.09E+06	1.124

Extraction Standards

4,4'-DDE, 13C12-	11.34	1.55	250.00	1.37E+07	0.917
4,4'-DDD, 13C12-	12.03	1.59	250.00	1.28E+07	0.856
4,4'-DDT, 13C12-	12.53	1.58	250.00	1.05E+07	0.704

Labeled Injection Standards

13C12-PCB-52 (IS)	9.48	0.79	100.00	5.98E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS6-089**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180928A04
 Inst # HRMS-6
 Column HP5MSUSR280851H

Run Date
 28-Sep-2018 17:22

Approved: *Ella Gdyczynski*
 --e-signature--
 02-Oct-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.83	1.56	400.00	3.54E+07	1.492
4,4'-DDE	11.36	1.57	400.00	2.74E+07	1.154
2,4'-DDD	11.53	1.61	400.00	3.00E+07	1.264
4,4'-DDD	12.05	1.64	400.00	2.93E+07	1.235
2,4'-DDT	12.11	1.61	400.00	2.16E+07	1.167
4,4'-DDT	12.55	1.65	400.00	2.05E+07	1.104
Extraction Standards					
4,4'-DDE, 13C12-	11.36	1.54	250.00	1.48E+07	0.908
4,4'-DDD, 13C12-	12.04	1.56	250.00	1.48E+07	0.908
4,4'-DDT, 13C12-	12.55	1.57	250.00	1.16E+07	0.709
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.49	0.79	100.00	6.54E+06	

ALS Life sciences

Calibration Summary Report

Calibration Level	Filename	Run Date
CS-1	6-180926B03	26-Sep-2018 16:34
CS-2	6-180926B02	26-Sep-2018 16:18
CS-3	6-180926B07	26-Sep-2018 17:55
CS-4	6-180926B06	26-Sep-2018 17:35
CS-5	6-180926B05	26-Sep-2018 17:14
CS-6	6-180926B04	26-Sep-2018 16:58

Approved: *R. Bakhtiari*
--e-signature--
28-Sep-2018

Target Analytes	Relative Response Factors						Mean	% RSD
	CS-1	CS-2	CS-3	CS-4	CS-5	CS-6		
2,4'-DDE	1.377	1.432	1.318	1.442	1.524	1.510	1.434	5%
4,4'-DDE	1.157	1.139	1.076	1.141	1.170	1.132	1.136	3%
2,4'-DDD	1.138	1.157	1.084	1.187	1.229	1.208	1.167	4%
4,4'-DDD	1.150	1.189	1.100	1.190	1.236	1.223	1.181	4%
2,4'-DDT	0.989	1.037	0.976	0.995	1.069	1.064	1.022	4%
4,4'-DDT	1.026	1.033	0.996	1.042	1.081	1.069	1.041	3%
Extraction Standards								
4,4'-DDE, 13C12-	0.715	0.638	0.742	0.683	0.725	0.697	0.700	5%
4,4'-DDD, 13C12-	0.743	0.675	0.786	0.724	0.811	0.818	0.760	7%
4,4'-DDT, 13C12-	0.656	0.566	0.713	0.663	0.703	0.741	0.674	9%

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS1-087**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180926B03
 Inst # HRMS-6
 Column HP5MSUSR280851H

Run Date 26-Sep-2018 16:34

Approved: *R. Bakhtiari*
 --e-signature--
 28-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.83	1.56	2.00	1.13E+05	1.377
4,4'-DDE	11.36	1.48	2.00	9.49E+04	1.157
2,4'-DDD	11.54	1.42	2.00	9.70E+04	1.138
4,4'-DDD	12.05	1.53	2.00	9.80E+04	1.150
2,4'-DDT	12.11	1.48	2.00	7.44E+04	0.989
4,4'-DDT	12.55	1.53	2.00	7.72E+04	1.026

Extraction Standards

4,4'-DDE, 13C12-	11.36	1.54	250.00	1.02E+07	0.715
4,4'-DDD, 13C12-	12.05	1.59	250.00	1.07E+07	0.743
4,4'-DDT, 13C12-	12.55	1.58	250.00	9.40E+06	0.656

Labeled Injection Standards

13C12-PCB-52 (IS)	9.49	0.79	100.00	5.73E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS2-087**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180926B02
 Inst # HRMS-6
 Column HP5MSUSR280851H

Run Date
 26-Sep-2018 16:18

Approved: *R. Bakhtiari*
 --e-signature--
 28-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.83	1.57	7.50	4.04E+05	1.432
4,4'-DDE	11.36	1.57	7.50	3.21E+05	1.139
2,4'-DDD	11.53	1.49	7.50	3.45E+05	1.157
4,4'-DDD	12.05	1.52	7.50	3.54E+05	1.189
2,4'-DDT	12.11	1.50	7.50	2.59E+05	1.037
4,4'-DDT	12.55	1.60	7.50	2.58E+05	1.033
Extraction Standards					
4,4'-DDE, 13C12-	11.36	1.55	250.00	9.39E+06	0.638
4,4'-DDD, 13C12-	12.04	1.57	250.00	9.93E+06	0.675
4,4'-DDT, 13C12-	12.55	1.59	250.00	8.32E+06	0.566
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.49	0.79	100.00	5.88E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS3-087**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180926B07
 Inst # HRMS-6
 Column HP5MSUSR280851H

Run Date 26-Sep-2018 17:55

Approved: *R. Bakhtiari*
 --e-signature--
 28-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.83	1.55	20.00	1.20E+06	1.318
4,4'-DDE	11.36	1.58	20.00	9.77E+05	1.076
2,4'-DDD	11.53	1.58	20.00	1.04E+06	1.084
4,4'-DDD	12.05	1.60	20.00	1.06E+06	1.100
2,4'-DDT	12.1	1.60	20.00	8.51E+05	0.976
4,4'-DDT	12.55	1.61	20.00	8.69E+05	0.996

Extraction Standards

4,4'-DDE, 13C12-	11.35	1.53	250.00	1.13E+07	0.742
4,4'-DDD, 13C12-	12.04	1.56	250.00	1.20E+07	0.786
4,4'-DDT, 13C12-	12.54	1.57	250.00	1.09E+07	0.713

Labeled Injection Standards

13C12-PCB-52 (IS)	9.48	0.78	100.00	6.12E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS4-087**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180926B06
 Inst # HRMS-6
 Column HP5MSUSR280851H

Run Date
 26-Sep-2018 17:35

Approved: *R. Bakhtiari*
 --e-signature--
 28-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.83	1.57	50.00	2.75E+06	1.442
4,4'-DDE	11.36	1.55	50.00	2.17E+06	1.141
2,4'-DDD	11.53	1.58	50.00	2.40E+06	1.187
4,4'-DDD	12.04	1.59	50.00	2.40E+06	1.190
2,4'-DDT	12.1	1.56	50.00	1.84E+06	0.995
4,4'-DDT	12.55	1.59	50.00	1.93E+06	1.042

Extraction Standards

4,4'-DDE, 13C12-	11.35	1.54	250.00	9.53E+06	0.683
4,4'-DDD, 13C12-	12.04	1.56	250.00	1.01E+07	0.724
4,4'-DDT, 13C12-	12.54	1.55	250.00	9.25E+06	0.663

Labeled Injection Standards

13C12-PCB-52 (IS)	9.48	0.79	100.00	5.58E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS5-087**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180926B05
 Inst # HRMS-6
 Column HP5MSUSR280851H

Run Date
 26-Sep-2018 17:14

Approved: *R. Bakhtiari*
 --e-signature--
 28-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.82	1.56	150.00	9.22E+06	1.524
4,4'-DDE	11.35	1.56	150.00	7.07E+06	1.170
2,4'-DDD	11.52	1.62	150.00	8.31E+06	1.229
4,4'-DDD	12.04	1.63	150.00	8.36E+06	1.236
2,4'-DDT	12.1	1.60	150.00	6.27E+06	1.069
4,4'-DDT	12.54	1.63	150.00	6.34E+06	1.081

Extraction Standards

4,4'-DDE, 13C12-	11.34	1.55	250.00	1.01E+07	0.725
4,4'-DDD, 13C12-	12.03	1.58	250.00	1.13E+07	0.811
4,4'-DDT, 13C12-	12.54	1.58	250.00	9.78E+06	0.703

Labeled Injection Standards

13C12-PCB-52 (IS)	9.48	0.78	100.00	5.56E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS6-087**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180926B04
 Inst # HRMS-6
 Column HP5MSUSR280851H

Run Date
 26-Sep-2018 16:58

Approved: *R. Bakhtiari*
 --e-signature--
 28-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.83	1.55	400.00	2.68E+07	1.510
4,4'-DDE	11.36	1.56	400.00	2.01E+07	1.132
2,4'-DDD	11.53	1.61	400.00	2.51E+07	1.208
4,4'-DDD	12.05	1.64	400.00	2.54E+07	1.223
2,4'-DDT	12.11	1.65	400.00	2.00E+07	1.064
4,4'-DDT	12.55	1.61	400.00	2.01E+07	1.069

Extraction Standards

4,4'-DDE, 13C12-	11.35	1.54	250.00	1.11E+07	0.697
4,4'-DDD, 13C12-	12.04	1.58	250.00	1.30E+07	0.818
4,4'-DDT, 13C12-	12.54	1.58	250.00	1.18E+07	0.741

Labeled Injection Standards

13C12-PCB-52 (IS)	9.49	0.78	100.00	6.36E+06	
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ALS Life sciences

Second Source Calibration Verification Report

Sample Name	CVS	Sampling Date	n/a	
ALS Sample ID	H6-18-RS1-089	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018

Run Information	Run 1
Filename	6-180928A08
Run Date	28-Sep-18 18:43
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	0			
4,4'-DDE	150	11.35	95	75-125
2,4'-DDD	0			
4,4'-DDD	150	12.03	99	75-125
2,4'-DDT	0			
4,4'-DDT	150	12.54	97	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.34	104	70-130
4,4'-DDD, 13C12-	250	12.03	104	70-130
4,4'-DDT, 13C12-	250	12.53	107	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-1068	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018

Run Information	Run 1
Filename	6-180928A09
Run Date	28-Sep-18 19:05
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.82	98	75-125
4,4'-DDE	50	11.35	99	75-125
2,4'-DDD	50	11.53	100	75-125
4,4'-DDD	50	12.04	101	75-125
2,4'-DDT	50	12.10	98	75-125
4,4'-DDT	50	12.54	100	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.35	101	70-130
4,4'-DDD, 13C12-	250	12.04	99	70-130
4,4'-DDT, 13C12-	250	12.54	102	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-1070	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018

Run Information	Run 1
Filename	6-180928A36
Run Date	29-Sep-18 04:08
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	ng / mL	Ret.		Limits	
		Time	% Rec	Flags	
2,4'-DDE	50	10.83	101	75-125	
4,4'-DDE	50	11.36	103	75-125	
2,4'-DDD	50	11.53	101	75-125	
4,4'-DDD	50	12.04	102	75-125	
2,4'-DDT	50	12.10	115	75-125	
4,4'-DDT	50	12.55	104	75-125	
Extraction Standards	ng / mL				
4,4'-DDE, 13C12-	250	11.35	120	70-130	
4,4'-DDD, 13C12-	250	12.04	104	70-130	
4,4'-DDT, 13C12-	250	12.54	82	70-130	

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-1086	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018

Run Information	Run 1
Filename	6-181001A01
Run Date	01-Oct-18 15:07
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.82	117	75-125
4,4'-DDE	50	11.35	107	75-125
2,4'-DDD	50	11.52	114	75-125
4,4'-DDD	50	12.04	103	75-125
2,4'-DDT	50	12.09	118	75-125
4,4'-DDT	50	12.54	106	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.34	95	70-130
4,4'-DDD, 13C12-	250	12.03	90	70-130
4,4'-DDT, 13C12-	250	12.53	77	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-1088	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018

Run Information	Run 1
Filename	6-181001A12
Run Date	01-Oct-18 18:45
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.82	115	75-125
4,4'-DDE	50	11.35	105	75-125
2,4'-DDD	50	11.52	116	75-125
4,4'-DDD	50	12.03	99	75-125
2,4'-DDT	50	12.09	125	75-125
4,4'-DDT	50	12.54	104	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.34	99	70-130
4,4'-DDD, 13C12-	250	12.03	90	70-130
4,4'-DDT, 13C12-	250	12.53	72	70-130

ALS Life sciences

Second Source Calibration Verification Report

Sample Name	CVS	Sampling Date	n/a	
ALS Sample ID	H6-18-RS1-087	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Sep-2018

Run Information	Run 1
Filename	6-180926B08
Run Date	26-Sep-18 18:15
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	0			
4,4'-DDE	150	11.35	95	75-125
2,4'-DDD	0			
4,4'-DDD	150	12.04	96	75-125
2,4'-DDT	0			
4,4'-DDT	150	12.54	96	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.34	97	70-130
4,4'-DDD, 13C12-	250	12.03	98	70-130
4,4'-DDT, 13C12-	250	12.53	97	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-1050	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Sep-2018

Run Information	Run 1
Filename	6-180926B24
Run Date	26-Sep-18 23:38
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	ng / mL	Ret.			Limits	
		Time	% Rec		Flags	
2,4'-DDE	50	10.83	101	75-125		
4,4'-DDE	50	11.36	100	75-125		
2,4'-DDD	50	11.53	104	75-125		
4,4'-DDD	50	12.05	107	75-125		
2,4'-DDT	50	12.10	99	75-125		
4,4'-DDT	50	12.55	103	75-125		
Extraction Standards	ng / mL					
4,4'-DDE, 13C12-	250	11.35	98	70-130		
4,4'-DDD, 13C12-	250	12.04	94	70-130		
4,4'-DDT, 13C12-	250	12.54	94	70-130		

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-1052	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Sep-2018

Run Information	Run 1
Filename	6-180926B40
Run Date	27-Sep-18 05:01
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.82	98	75-125
4,4'-DDE	50	11.35	100	75-125
2,4'-DDD	50	11.53	97	75-125
4,4'-DDD	50	12.04	98	75-125
2,4'-DDT	50	12.10	102	75-125
4,4'-DDT	50	12.54	102	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.35	109	70-130
4,4'-DDD, 13C12-	250	12.04	98	70-130
4,4'-DDT, 13C12-	250	12.54	87	70-130

SVOC DATA PACKAGE

SECTION 5: QC SAMPLE DATA

Including:

- Laboratory Method Blank Analysis Reports
- Laboratory Control Sample Analysis Reports
- Matrix Spike Analysis Reports
- Other QC Sample Analysis Reports (where applicable)

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	WG2879551-1	Extraction Date	20-Sep-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5 g	
Analysis Type	Blank	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	6-180928A15
Run Date	28-Sep-18 21:04
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	NotFnd	<0.012	0.012	U		2.0
4,4'-DDE	NotFnd	<0.014	0.014	U		2.0
2,4'-DDD	NotFnd	<0.018	0.018	U		2.0
4,4'-DDD	NotFnd	<0.021	0.021	U		2.0
2,4'-DDT	NotFnd	<0.023	0.023	U		2.0
4,4'-DDT	NotFnd	<0.037	0.037	U		2.0
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.34	88	21-125		
4,4'-DDD, 13C12-	125	12.03	71	5-150		
4,4'-DDT, 13C12-	125	12.53	56	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.

LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.

U Indicates that this compound was not detected above the EDL.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a	Approved: <i>Ella Gdyczynski</i> --e-signature-- 02-Oct-2018
ALS Sample ID	WG2879551-2	Extraction Date	20-Sep-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5 g	
Analysis Type	LCS	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	6-180928A12
Run Date	28-Sep-18 20:03
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	ng	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	25	10.82	101	50-120
4,4'-DDE	25	11.35	92	50-120
2,4'-DDD	25	11.52	111	42-120
4,4'-DDD	25	12.04	93	42-120
2,4'-DDT	25	12.10	106	50-120
4,4'-DDT	25	12.54	93	50-120
Extraction Standards	ng			
4,4'-DDE, 13C12-	125	11.34	81	21-125
4,4'-DDD, 13C12-	125	12.03	64	13-200
4,4'-DDT, 13C12-	125	12.53	55	13-200

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	L	Approved: <i>R. Bakhtiari</i> --e-signature-- 28-Sep-2018
ALS Sample ID	WG2874099-1	Extraction Date	12-Sep-18		
Analysis Method	EPA 1699 (mod)	Sample Size	1		
Analysis Type	Blank	Percent Solid	n/a		
Sample Matrix	QC	Split Ratio	1		

Run Information	Run 1
Filename	6-180926B33
Run Date	27-Sep-18 02:39
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/L
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	Ret. Time	Conc. ng / L	EDL ng / L	Flags	EMPC ng / L	LQL
2,4'-DDE	NotFnd	<0.083	0.083	U		10
4,4'-DDE	NotFnd	<0.11	0.11	U		10
2,4'-DDD	NotFnd	<0.18	0.18	U		10
4,4'-DDD	NotFnd	<0.17	0.17	U		10
2,4'-DDT	NotFnd	<0.19	0.19	U		10
4,4'-DDT	NotFnd	<0.27	0.27	U		10
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.35	75	21-125		
4,4'-DDD, 13C12-	125	12.03	67	5-150		
4,4'-DDT, 13C12-	125	12.54	49	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.

LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.

U Indicates that this compound was not detected above the EDL.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a	
ALS Sample ID	WG2874099-2	Extraction Date	12-Sep-18	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	LCS	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Sep-2018

Run Information	Run 1
Filename	6-180926B29
Run Date	27-Sep-18 01:18
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	ng	Ret.		Limits		Flags
		Time	% Rec			
2,4'-DDE	25	10.82	152	50-120		M
4,4'-DDE	25	11.35	95	50-120		
2,4'-DDD	25	11.52	103	42-120		
4,4'-DDD	25	12.04	93	42-120		
2,4'-DDT	25	12.10	90	50-120		
4,4'-DDT	25	12.54	94	50-120		
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.35	15	21-125		
4,4'-DDD, 13C12-	125	12.03	58	13-200		
4,4'-DDT, 13C12-	125	12.53	22	13-200		

M Indicates that a peak has been manually integrated.

SVOC DATA PACKAGE

SECTION 6: INTERNAL RECORDS

Including:

- Prep Logs
- Independent calculation checks
- Others as listed below:

Extraction Workup Sheet

Batch ID: WG2879551

BU-TM-1110 Overall HR Prep

Analysis: Sediments - OCP

Analyst: Jackson Pegg

Date: 20-Sep-2018

SUBSAMPLING

Sample I.D.	Client I.D.	Subsample Size (g)
WG2879551-1	Method Blank	10.30
WG2879551-2	Laboratory Control Sample	10.21
WG2879551-3	Extraction and Injection STD.	—
L2161800-1	PDI-SC-S113C-0TO1.1	10.31
WG2879551-4	Duplicate(L2161800-1)	10.26
L2161800-2	PDI-SC-S113C-1.1TO3.1	10.42
L2161800-3	PDI-SC-S113C-3.1TO5.6	10.42
L2161800-4	PDI-SC-S113C-5.6TO6.6	10.10
L2161800-5	PDI-SC-S260-0TO1.3	10.43
L2161800-6	PDI-SC-S260-1.3TO2.6	10.31
L2161800-7	PDI-SC-S260-2.6TO4.2	10.32
L2161800-8	PDI-SC-S260-4.2TO6	10.23
L2161800-9	PDI-SC-S260-6TO7	10.02
L2161800-10	PDI-SC-S019-0TO2	10.24
L2161800-11	PDI-SC-S019-2TO4	10.20
L2161800-12	PDI-SC-S019-4TO6	10.09
L2161800-13	PDI-SC-S019-6TO8	10.13
L2161800-14	PDI-SC-S019-8TO10	10.04
L2161800-15	PDI-SC-S019-10TO12	10.04
L2161800-16	PDI-SC-S019-12TO13.7	10.32
L2161800-17	PDI-SC-S019-13.7TO14.7	10.34
L2161800-18	PDI-SC-S019-10TO12D	10.09
	See Special submission instructions	

BATCH TRACKING

	Date/Time/Initials
Subsampling:	20-Sep-2018 11:30AM JP
Balance ID	3955
Client Labels Checked:	JP
Samples Spiked	MM 20-Sep-2018
Soxhlet start time:	20-Sep-2018 4:45pm
Soxhlet reflux properly:	MM
Soxhlet end time:	21-Sep-2018 8:45AM JP
	—
Rotovap + temp check:	MM 27-Sep-2018
	—
Sili Column:	MM 27-Sep-2018
Mini Acid	—
	—
	—
Robo-Vialing:	NA 28-Sep-18
Update to LIMS:	NA 28-Sep-18

Batch ID: WG2879551

DX Extraction Standard:

Sample I.D.	Volume (ul)	Spiked (Checkmark)
WG2879551-1	20	✓
WG2879551-2	20	✓
WG2879551-3	20	✓
L2161800-1	20	✓
WG2879551-4	20	✓
L2161800-2	20	✓
L2161800-3	20	✓
L2161800-4	20	✓
L2161800-5	20	✓
L2161800-6	20	✓
L2161800-7	20	✓
L2161800-8	20	✓
L2161800-9	20	✓
L2161800-10	20	✓
L2161800-11	20	✓
L2161800-12	20	✓
L2161800-13	20	✓
L2161800-14	20	✓
L2161800-15	20	✓
L2161800-16	20	✓
L2161800-17	20	✓
L2161800-18	20	✓
	20	
	20	
	20	

Syringe ID

137

Standard:

HROCP_DDX-ES#1-002B

Spike Date:

20-Sep-2018

Spike Witnessing

Chemist's Initials

Chemist:

MM

Witness's Initials

Witness:

JP

Witness's Initials

Correct Syringe Obtained:

JP

Witness's Initials

Correct Standard Obtained:

JP

Witness's Initials

Correct Technique Followed:

JP

Batch ID: WG2879551

Syringe ID

202

Standard:

HROCP-NS#2-002A

Date & Initials:

20-Sep-2018 MM

DX Native Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2879551-2	20	✓
WG2879551-3	20	✓
	20	
	20	

DX Injection Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2879551-1	20	✓
WG2879551-2	20	✓
WG2879551-3	20	✓
L2161800-1	20	✓
WG2879551-4	20	✓
L2161800-2	20	✓
L2161800-3	20	✓
L2161800-4	20	✓
L2161800-5	20	✓
L2161800-6	20	✓
L2161800-7	20	✓
L2161800-8	20	✓
L2161800-9	20	✓
L2161800-10	20	✓
L2161800-11	20	✓
L2161800-12	20	✓
L2161800-13	20	✓
L2161800-14	20	✓
L2161800-15	20	✓
L2161800-16	20	✓
L2161800-17	20	✓
L2161800-18	20	✓
	20	
	20	
	20	

Syringe ID

218

Standard:

HROCP-IS#1-016E

Date & Initials:

27-Sep-2018 NA

Correct Syringe Obtained:

Chemist's Initials

NA

Correct Standard Obtained:

Chemist's Initials

NA

Correct Technique Followed:

Chemist's Initials

NA

Procedure:

This batchsheet is a guideline only. Please see test procedure for complete set of instructions.

SubSampling☐☐

Subsample 10g weight wet (5g dry weight)

☐

Spike the samples with Extraction/Native Standards.

☐

Soxhlet extract in DCM for 16 hours.

☐

Rotovap down to ~4ml. Transfer with hexane rinses to ctube.

☐

Reduce gently to 1mL

Sili Column (Column does not contain carbon)

- Load sample with 3x1mL hexane rinses

- **F1** = 25 mL of Hexane

- **F2** = 50mL of 1:1 DCM:Hexane

- Reduce sili-column F2 to 1mL.

Mini Acid Silica Column

- Load sample with 3x1mL hexane rinses

- Elute with 15 ml of DCM

Robo-vial

- Reduce to 5mL

-**Spike IS standard and mix thoroughly**

-**Remove 1ml from C-tube and transfer to a robovial and submit FV=1000ul**

- Transfer remaining 4ml to a supelco vial and archive

Reagent Lot Numbers:

Reagent	Lot#	Manufacturer
Acetone	103158	
Hexane	103181	
DCM	103502	
Toluene	102516	
Nonane	ORG-WAKONON- ✓	
1:1 DCM:HEX	ORG-DH2- 0/2	
Sodium Sulphate	ORG-SSU- 1977	
Acid Silica	ORG-ASI- 1792 7918	
Neutral Silica	ORG-NSI- 1792	
Alumina	ORG-ALU- 4	
Chromacarb	ORG-CC- ✓	
Corn Oil	ORG-CO- ✓	

Comments:

WG:			Prep Analyst:		
Analysis:			Date:		
	Very Good	Meets Method Req	Some Outliers	Very Poor	Comments / Was spl/batch sent for rework? Why?
MB					
LCS					
DUP					
ES rec					

5

84 of 95

(Checkmark)

[illegible]

OCP Native Standard:

Sample I.D.	Volume (µL)	Spiked
WG2874099-2	20	✓
WG2874099-3	20	✓

Syringe ID:

137

HROCP_DDX-ES#1 - 00

Standard:**Spike Date:**

12-Sept-2018

Spike Witnessing

Chemist's Initials

Chemist:

NIS as per

Witness's Initials

Witness:

13

Witness's Initials

Correct Syringe Obtained:

KB

Witness's Initials

Correct Standard Obtained:



Witness's Initials

Correct Technique Followed:

KB

Syringe ID:

202

Standard:

**Date &
Initials:**

12-Sept-2018

Batch ID:

WG2874099

Procedure:

Extraction:

***Note: this batchsheet is a guideline only. See Test Procedure for complete set of instructions.**

- Sample Size = 1L (Mark bottle so that exact volume can be determined.)
- Standards added to 1mL Acetone, and then added to sep funnel with 2 acetone rinses, then swirled.
- Extracted with 3x 100mL DCM, then dried over sodium sulphate.
- Reduce to ~5mL (Don't go below 5mL in volume on the roto-vap)
- Transfer to a c-tube (calibrated at 1ml level) with 3x2mL DCM.
- Blow down to exactly 1mL.

-Sili Column - Load sample with 3x1mL hexane rinses

- F1 = 25 mL of Hexane
- F2 = 50mL of 1:1 DCM:Hexane

-reduce F2 to 1ml**Mini Acid Silica Column**

- Load sample with 3x1mL hexane rinses
- Elute with 15 ml of DCM

-Reduce to 5ml**-Spike IS and mix thoroughly****-Transfer 1mL to a robovial and submit FV=1000ul**

Approval of Deviation from Standard Method

☐ Procedure does not deviate from Standard Method.

(Batch Writer): _____

☐ Procedure does deviate from Standard Method.

Approved (Supervisor/Manager): _____

Comments:

**** Protect samples from light as much as possible. ****

**** Samples must submit to instruments within 5 days of extraction ****

WG:			Prep Analyst:		
Analysis:			Date:		
	Very Good	Meets Method Req	Some Outliers	Very Poor	Comments / Was spl/batch sent for rework? Why?
MB					
LCS					
DUP					
ES rec					

ALS Life sciences

Sample Calculation Report

CS3 RRF Check

Approved: *Ella Gdyczynski*
--e-signature--
02-Oct-2018

$$\text{RRF} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{Concentration of 13C2-4,4'DDE}}{\text{Concentration of DDE}}$$

Calculated Value Value from TargetLynx

$$\text{RRF} = \frac{1246181.50}{14056656.50} \times \frac{250.00}{20} = 1.11 \quad 1.11$$

Calculation of 4,4'-DDE amount in L2161800-1

$$\text{ng} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{ng of 13C12-4,4'-DDE spiked}}{\text{Mean RRF} \times \text{Sample Size}}$$

$$\text{ng/g} = \frac{65165.8}{107663.1} \times \frac{125}{1.15 \times 5.18} = 12.7 \quad 12.7$$

Calculation of 13C12-4,4'-DDE Recovery in L2161800-1

$$\% \text{ Recovery} = \frac{\text{Response of 13C12-4,4'-DDE}}{\text{Response of 13C12-PCB-52}} \times \frac{\text{ng of 13C12-PCB-52} \times 100}{\text{Mean RRF} \times \text{Amount Spiked}}$$

$$\% \text{ Recovery} = \frac{107663.1}{49552.9} \times \frac{50 \times 100}{0.90 \times 125} = 97 \quad 97 \%$$

ALS Life sciences

Sample Calculation Report

CS3 RRF Check

Approved:

R. Bakhtiari

--e-signature--

28-Sep-2018

$$\text{RRF} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{Concentration of 13C2-4,4'DDE}}{\text{Concentration of DDE}}$$

Calculated
Value

Value from
TargetLynx

$$\text{RRF} = \frac{976792.10}{11346795.50} \times \frac{250.00}{20} = 1.08 \quad \text{Value from TargetLynx: } 1.08$$

Calculation of 4,4'-DDE amount in WG2874099-2 (LCS)

$$\text{ng} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{ng of 13C12-4,4'-DDE spiked}}{\text{Mean RRF} \times \text{Sample Size}}$$

$$\text{ng, \%} = \frac{73644.9}{340385.1} \times \frac{125}{1.14 \times 1.00} = \begin{matrix} \text{ng} \\ 23.8 \end{matrix} \quad \begin{matrix} \% \\ 95 \end{matrix} \quad \begin{matrix} \% \\ 95 \end{matrix}$$

Calculation of 13C12-4,4'-DDE Recovery in L2161800-19

$$\% \text{ Recovery} = \frac{\text{Response of 13C12-4,4'-DDE}}{\text{Response of 13C12-PCB-52}} \times \frac{\text{ng of 13C12-PCB-52} \times 100}{\text{Mean RRF} \times \text{Amount Spiked}}$$

$$\% \text{ Recovery} = \frac{1005238.9}{1262553.6} \times \frac{50 \times 100}{0.70 \times 125} = 45 \quad \text{45 \%}$$

SVOC DATA PACKAGE

SECTION 7: SHIPPING/RECEIVING DOCUMENTS

Including:

- Airbills
- Chain-of-Custody Records
- Sample Log-in Sheet(s) - where applicable
- Others as listed below:

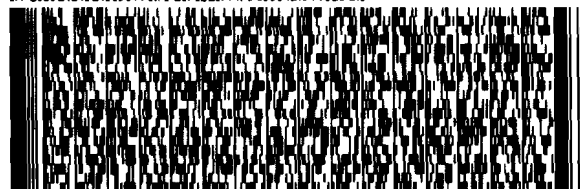
[illegible]

SHIP DATE: 10SEP18
ACTWGT: 63.10 LB
CAD: 006894758/SSFE1904
DIMS: 25x13x13 IN
BILL RECIPIENT

CHEEKTOWAGA NY 14225

REF:

DEPT:



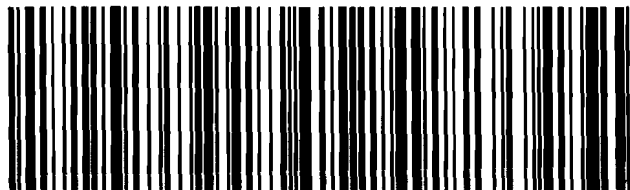
FedEx
Express



[REDACTED]

TUE - 11 SEP HOLD
PRIORITY OVERNIGHT
HLDAH
BUFA
NY-US BUF

XX BUFA



Sample Receiving Log

Date/Time Received	Client ID	Number/Description of Containers	Temp. on Receipt*	Condition of Samples, Courier & Tracking Information	Receiver's Initials	Date/Time Login Completed	Submission ID	Sample ID Range
11-Sept-2018 14:30	Aecom	36 x jars of Sediment 6 x 1L amber bottles	6.4°C	Good FedEx 812404757515	Ng	11-Sept-2018 16:00	L2161800	-1-21

*Temperatures were recorded using: ☒ 'Oakton InfraPro' dedicated I.R. gun (serial #97800270)

☐ Other (specify): _____